

Subject: (Volt) High Voltage Drive Motor Battery TAC Restriction and Exchange Program

Models: 2016-2017 Chevrolet Volt

This PI was superseded to update Model Years. Please discard PIC6127C.

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

Condition/Concern

As part of our ongoing quality improvement process, effective August 24, 2015 the High Voltage Drive Motor Battery and Battery sections, for the 2016-2017 Chevrolet Volt is being placed on restriction through the GM Technical Assistance Center (TAC). We will also put the following internal battery parts on restriction

1. High Voltage Battery Disconnect Relay (Also known as A28 Hybrid/EV Battery Contactor Assembly) GM Part Number: 24278166 or 24279022
2. Battery Energy Control Module (BECM) GM part Number: 24279214

Note: Please review all of the information provided below prior to contacting the GM Technical Assistance Center (TAC) @ 877-446-8227 (U.S.) or in Canada 1-800-263-7740 (English) or 1-800-263-7960(French) to review case details.

This P/I will explain the Drive Motor Battery Exchange Program for the 2016 Chevrolet Volt. It is expected that this exchange program will remain in effect for a minimum of 12 months. Product teams continually seek valuable information for engineering improvements.

This exchange program is also designed to gain important feedback on this new High Voltage Drive Motor Battery assembly including validating the service diagnostics, repair, and re-qualification procedures

During the initial exchange period, components inside the drive motor battery assembly will not be replaced.

As more repairs are allowed, internal to the High Voltage Drive Motor Battery, this exchange P/I will be updated.

Do not remove any Drive Motor Battery assembly covers during this exchange period unless instructed to do so by TAC.

PARTS RETENTION AND RETURNS UNITED STATES SERVICE AGENTS Only

1. The drive motor battery must be returned unopened unless specifically instructed by TAC or GM engineering. You will be contacted on where to send the returned battery back for root cause analysis and/or refurbishment. Failure to return a battery within 30 days will result in significant cost to the dealer. If the batteries are not returned within 30 days the dealer will be charged the value of a replacement battery. These charges are substantial. You will be advised within three days after repair where the battery assembly will be returned to.
2. There are two different area's the battery assembly can be returned to.
 - 2.1) The Warranty Parts Center (WPC) also known as Priority 1 Root Cause
 - 2.2) The Battery Service Center also known as Priority 2 Root Cause
3. The dealer should receive a Special Parts Request from the Warranty Parts Center or be contacted by the Priority 2 Provider requesting the battery assembly.

Note: DO NOT send the battery back to the Warranty Parts Center (WPC) or the Battery Service Center without a special parts request.

Note: If you do not receive a direction of where to ship the battery assembly, verify that you do not have an existing open WPC Request. If you don't have a WPC Request, GM CCA Logistics Provider will contact you within a week to arrange transportation. Contact Keith Lock @ 810 606 2576 or by E-mail (keith.a.loch@gm.com) if you do not hear from the GM Logistics Provider for shipping instructions and the proper paper work in order to return the failed Drive Motor Battery Assembly.

Note: Failure to return the battery assembly by the due date will result in the dealership being debited the entire warranty claim (parts and labor) as well as assessment for the value of the pack " chargeback". This fee can be substantial and will only be assessed if a battery pack is not returned in the designated time frame.

4. If returning the battery assembly to the Warranty Parts Center. Please follow the WPC guidelines and shipping instructions below:
 - 4.1) Parts Return Request (WPC): A Special Parts Return Request will be faxed to you with proper shipping instructions. Do NOT wait for the warranty claim to be paid before returning the failed used battery.
 - 4.2) Do NOT return battery in any other container than the container (cocoon) that the new/refurbished battery was delivered in. The removed unit must be returned complete in the original exchange shipping container
 - 4.3) The Special Parts Request will provide a request number. This request number must be placed in the outside shipping envelope along with the TAC Case number. Dealers need to place a new envelope inside the battery cocoon with completed Volt Battery Exchange information including the TAC Case #, along with a copy of the Job Card (RO) including the technician's comments, DTCs, and diagnostics. It is recommended that this be taped to the battery inside the cocoon. Failure to place this information both outside and inside the battery shipping container may delay the processing of your return.

Note: Do not ship a battery back without an official WPC Request

4.4) Place a copy of the Special Parts Return Request, repair order with technician comments, and the completed "Volt Battery Product Feedback Form" and place into the plastic envelope. The bill of lading and customs papers (for cross border shipments) should also be inserted into the plastic envelope. Remove the original shipping label and attach the plastic envelope with the return shipping label on it to the container.

4.5) Label the outside of the shipping container with the Part Return request number and the TAC case reference number. Refer to Corporate Bulletin Number 99-00-89-019F for detailed shipping information

4.6) Contact UPS Freight 1-800-333-7400 for pick-up of removed battery. If lift gate service is necessary, please request it at the time of arranging pick-up service.

4.7) Have the driver sign the bill of lading. Retain a copy of the signed bill of lading and attach your copy to the original repair order. This will be your proof of returning the Drive Motor Battery.

4.8) Ship the Volt battery Third Party Prepaid Freight Collect with appropriate paperwork to address provided.

5. If returning the battery back to the Battery Service Center also known as priority 2 root cause. Please follow guidelines and shipping instructions below:

Note: Never ship a damaged or compromised battery without prior approval. All hazardous materials must be shipped in accordance with all local, state, and federal laws.

5.1) Disable the high voltage at the drive motor generator battery. Refer to High Voltage Disabling.

5.2) Remove the Drive Motor Battery from the vehicle as outlined in Drive Motor Generator Battery Replacement in SI

5.3) Tighten any fasteners that were loosened or removed during Drive Motor Battery removal to the original torque specification.

5.4) Remove any plastic shipping plugs or covers from the new unit and install them on the Drive Motor Battery to be returned.

5.5) Write the TAC case reference number on the drive motor battery assembly in a visible location.

5.6) Write the TAC case reference number on the repair order.

5.7) Place the Drive Motor Battery on the cradle into the shipping container and attach the completed return shipping tag to the Drive Motor Battery.

This P/I will also be revised to announce the updates to the Drive Motor Battery Exchange program.

During the launch period of the 2016-2017 Chevrolet Volt the Drive Motor Battery may also be referred to as the Lithium Ion High Voltage Battery.

The Exchanged Drive Motor Batteries and battery sections will be refurbished and tested to provide a capacity greater to or equal to the replaced battery.

Prior to calling TAC, please make sure to complete the Volt Battery Exchange required Information and diagnosis provided in the recommendations portion of this PI.

Performing the diagnosis and obtaining the required information will minimize the time spent on the telephone and avoid the need for multiple calls to TAC.

Guidelines for honoring this exchange program are being strictly enforced.

To obtain a replacement drive motor battery, the servicing volt technician must provide TAC with a detailed customer complaint, conditions, diagnostic trouble codes (DTC.S) and other useful information as outlined below in the recommendations field.

Danger: Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed.

The High Voltage Disabling procedure will perform the following tasks:

1. Identify how to disable high voltage.
2. Identify how to test for the presence of high voltage.
3. Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed

Before working on any high voltage system, be sure to wear the following Personal Protection Equipment:

1. Safety glasses with appropriate side shields when within 50 feet of the vehicle, either indoors or outdoors.
2. Certified and up-to-date Class "0" Insulation gloves rated at 1000V with leather protectors.
3. Visually and functionally inspect the gloves before use.
4. Wear the Insulation gloves at all times when working with the Drive Motor Battery assembly, whether the system is energized or not.

Failure to follow the procedures exactly as written may result in serious injury or death.

Recommendation/Instructions

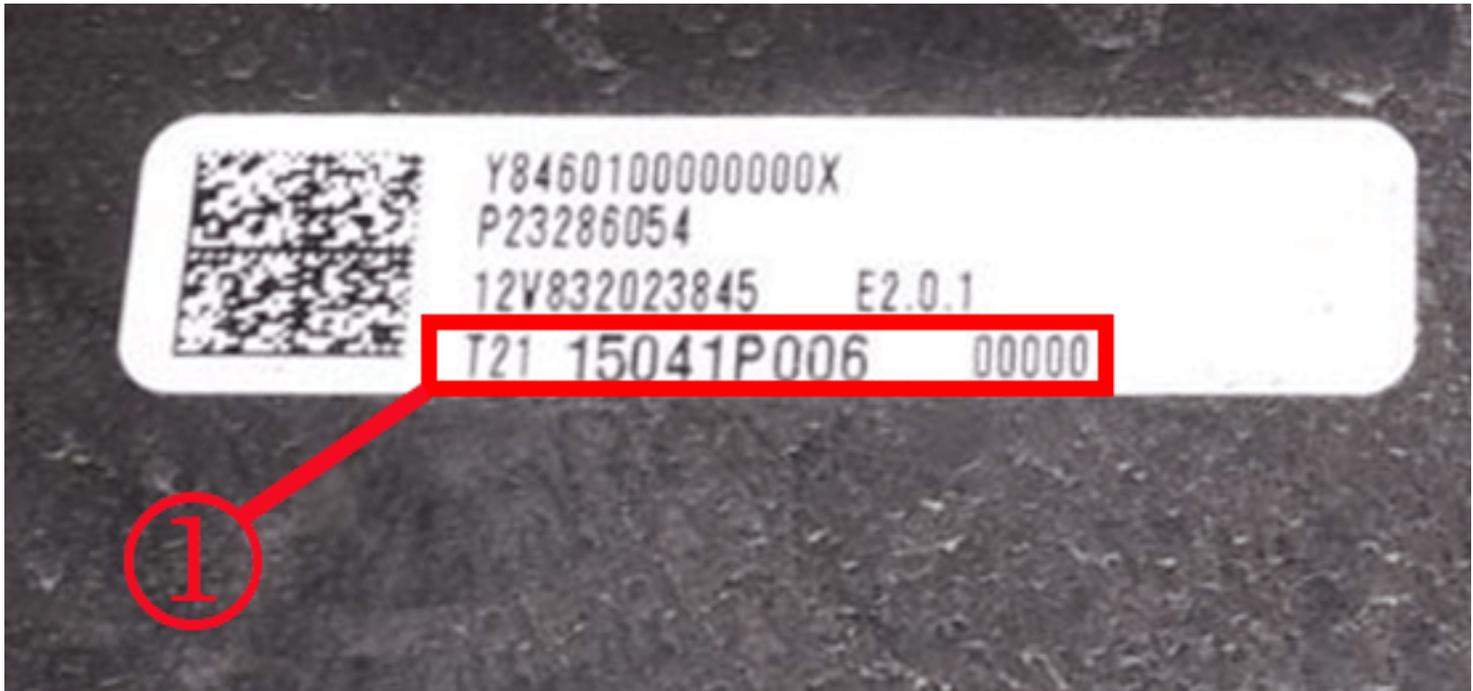
Please have a certified Volt technician follow the diagnostic procedures below prior to contacting TAC.

1. If DTCs are present and procedure gives direction to remove internal components; stop, capture GDS2 Session Log stored data, and test drive vehicle with GDS and MDI, and capture a snap shot of the Hybrid Powertrain Control Module 2 (VICM) and BECM data when condition occurs. See Latest version of PIP4902 for correct session logs data collection and procedure for emailing. TAC may request that you e-mail the Session Logs to them. Do not clear codes prior to capturing data and calling TAC.
2. If DTCs are not present, refer to "Symptoms - Hybrid Controls " in SI.

3. If any diagnostic procedure gives direction to remove internal components, stop and call TAC, internal components should not be removed at this time.
4. Upon review of the diagnosis, TAC will establish a case reference number and make arrangements for ordering an exchange battery assembly
5. After verifying that the high voltage systems are disabled, remove battery assembly per SI procedures.

Note: The Battery pack has a ground strap that are attached to the battery. ONLY remove the ground strap on the vehicle side. The new battery will come with the 2 ground straps already attached.

6. Prior to contacting TAC, check with your parts personnel for the parts department hours of operation (including Saturdays if open) and the name of the parts contact that will be handling the battery pack. This information along with the battery identification number (BIN) and the 4 digit battery capacity number will need to be supplied to the TAC consultant prior to ordering the battery.
 - 6.1 The battery pack 4 digit capacity code is located in the HPCM 2 under the voltage data list. You need to make sure that you have the latest version of GDS 2 to see this 4 digit code.
 - 6.2 The battery has a battery identification tag that is located on the right side of the battery. Locate the tag and record the 16 digit battery identification number (BIN). The BIN is the bottom most number on the label and it starts with a "T" indicator (See Photo Below). If the battery is not out of the vehicle yet, you can find the BIN by installing the MDI and using GDS 2. Access the Battery Energy Control Module and look under the identification information section and the sixteen digit number will be listed under the parameter: Hybrid/EV Battery Pack Identification Number



7. You will have to advise TAC if your dealer has a working fork-lift for loading and unloading the battery pack assembly.

Note: The exchange unit will be shipped without coolant. Follow SI procedure for proper coolant and fill procedures. Low coolant or wrong coolant could result in internal battery damage. For additional information on how to properly bleed the battery cooling system, please see the latest version of PI: PIP4859. For information on the proper battery coolant, please see the latest version of PI: PIP4910
8. Perform Drive Motor Generator Battery Control Module (BECM) reprogramming when replacing the new battery pack as well as check and reprogram all electric propulsion control modules with the latest calibrations.

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9. Next reset the Hybrid / EV battery pack data . This can be found in GDS 2 under: Hybrid Powertrain Control Module 2 and selecting Configuration/Reset Functions.
10. After SPS programming the BECM, you will have to drive the vehicle in Mountain Mode with the vehicle in Low Gear for approximately 5 miles (8 km). This will pack the most energy in the battery during charging and regeneration and exercises the coolant valves and pumps. When performing the 5 mile (8 km) drive cycle, drive vehicle in slalom (side to side motion) to purge any air from battery pack cooling plates. After the drive cycle, check for codes and top off the coolant system.
11. If replacing just a battery section, please make sure you have the EL-51763 High Voltage Battery Section Covers, EL-50115 Battery Section Lifting adapter, and the EL-48264 Battery Pack Lifting Adapter to help remove the battery section and then balance the battery section before installing the battery cover.
12. Fully charge the High Voltage Battery before delivering the vehicle to the customer.

After the Battery has been removed from the vehicle (see service manual procedure), and before placement into the shipping cocoon, prepare the battery for return by performing the following:

1. Install Coolant plugs (2) in coolant lines. Coolant plugs can be removed from the new service battery assembly and installed in the returned battery. Additional coolant plugs (GM p/n 22770854) can be ordered if they are needed. Note: As part of the battery removal process, all coolant should be drained from the drive motor battery.
2. Install the Manual Service Disconnect (MSD) Insert. The MSD Insert can be removed from the new service battery assembly and installed in the returned battery.

Note: The MSD lever should remain with the vehicle and not be returned with the battery assembly.

In order to properly prepare the used battery for shipping and to insure safe shipment, all of the above steps must be followed.

Note: The used battery must be removed and returned with a battery assembly lifting fixture (GM Special Tool EL-49976.) This lifting fixture will be attached to the used battery and placed in the shipping cocoon. Each new service battery will come with a battery assembly lifting fixture for use during installation. You will keep this fixture for servicing future battery removals.

Danger: The high voltage (HV) battery must be protected when outside of the vehicle. This is why the battery must be immediately placed in the original shipping container (cocoon).

Storage Guidelines:

1. Store the Drive Motor Battery flat.
2. Store the Drive Motor Battery in an environmentally protected area.
3. Maintain the Drive Motor Battery at room temperature.
4. Protect the Drive Motor Battery from exposure to liquids.
5. Protect the Drive Motor Battery from physical damage.
6. Store the Drive Motor Battery in a limited-access area

Danger: Failure to follow these guidelines may result in serious injury or death.

Parts Information

Model Year	Part Name	Part Number
2016-2017	High Voltage Battery Disconnect Relay	24278166 Rpl By 24279022
2016-2017	Battery Energy Control Module (BECM)	24279214
2016-2017	High Voltage Battery Section 1	19333491
2016-2017	High Voltage Battery Section 2	19333492
2016-2017	High Voltage Battery Section 3	19333493
2016-2017	High Voltage Battery Assembly	23348947

Warranty Information

For vehicles repaired under warranty use:

No Part Number should be entered for exchange components on the warranty claim.

Exchange battery is delivered to the dealer by Battery Spiers New Technologies (SNT).

Dealer is not billed for an exchange component unless it is not returned within the prescribed time period.

There will be a \$400 handling allowance for this exchange.

Applicable handling allowance and miscellaneous items such as coolant should be added to the part allowance amount and claimed in the Parts Cost column and not included in the Net Amount (DMN) column of the warranty claim.

Labor Operation	Description	Labor Time	Part Allowance
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5031030	Drive Motor Generator Battery Replacement	Use Published Labor Operation Time	\$400.00
5030290	Drive Motor Generator Battery Section Replacement	Use Published Labor Operation Time	\$250.00
Add	Administrative Allowance	0.2 hr	
Add	Road test – Data snapshot	0.3 hr	
Add	Additional time to balance section	1.0 hr	
Labor Operation	Description	Labor Time	Part Allowance
5031760	High Voltage Battery Disconnect Relay Replacement	Use Published Labor Operation Time	
5031010	Battery Energy Control Module Replacement	Use Published Labor Operation Time	

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.